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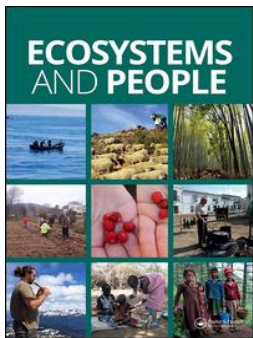
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## The 2019 review of IPBES and future priorities: reaching beyond assessment to enhance policy impact

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### ABSTRACT

The Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES) is an independent scientific body focused on assessing the state of the world's ecosystem services and biodiversity. IPBES members agreed in 2017 that a review of the Platform's first work programme should be undertaken by an independent panel examining all aspects of IPBES' work – including implementation of the four functions of IPBES; policies, operating principles and procedures; governance structure and arrangements; communication, stakeholder engagement and partnerships; and funding mechanisms.

The review found that for IPBES to have its anticipated transformative impact:

- All four functions of IPBES (i.e. assessment, knowledge generation, policy support, capacity building), with better communication, must be significantly strengthened, integrated and delivered together;
- The policy aspects of IPBES work need to be strengthened and greater emphasis needs to be placed on the co-design and co-production of assessments;
- A more strategic and collaborative approach to stakeholders is needed; and
- IPBES must develop a more sustainable financial base.

Given those changes, IPBES, as an embryonic boundary organization, can become the key influencing organization in the global landscape of biodiversity and ecosystem services organizations, helping thus to catalyze transformative change in the relationship between people and the rest of nature.

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## Introduction

The aspiration to bring together knowledge (including science) and policy in a productive exchange to develop and implement more effective and impactful policies is a key objective of global environmental governance. In the case of biodiversity and ecosystem services, the key such mechanism is the Intergovernmental Science–Policy Platform on Biodiversity and Ecosystem Services (IPBES). Established in 2012 by 94 countries, IPBES aims to 'strengthen the science–policy interface for biodiversity and ecosystem services (BES) for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development'.

Driven in part by the uncoordinated nature of the technical and scientific underpinning for the

biodiversity-relevant Multilateral Environmental Agreements (MEAs), a plethora of actors and processes shaped the creation of IPBES from the mid-2000s onwards. The creation of IPBES was premised on the need to access, collate, analyze, curate and manage the diversity of knowledge and supporting policy and implementation for BES. At a time when the Millennium Ecosystem Assessment had just concluded its work and UNEP had just launched The Economics of Ecosystems and Biodiversity (TEEB) studies, many called for an 'IPCC for biodiversity' (Loreau et al. 2006). The Intergovernmental Panel on Climate Change (IPCC) is often held as 'the gold standard for independent scientific assessment', and the analogy is one that IPBES still uses today to describe itself and its mandate. However, from

inception, important differences were clear between the issues of climate change and biodiversity: ‘Whereas climate is driven at the global level, biodiversity change is a more local affair. Backers of the IPBES acknowledge that point; from the outset, the panel will conduct assessments on regional as well as global scales.’ (Editorial Nature 2010).

In 2010, under UNEP’s sponsorship, a formal meeting in Busan, South Korea, agreed to the establishment of IPBES as an independent, intergovernmental body. The Busan meeting (UNEP 2010) identified a number of key principles for IPBES to successfully operate as a science–policy interface, including being demand-driven (responding to knowledge needs from governments); collaborative with existing initiatives in BES; scientifically independent; inclusive of a range of knowledge systems; interdisciplinary; and importantly, being policy-relevant but not policy-prescriptive. Further, it was agreed that the Platform should implement four core functions: (i) identify and prioritize key scientific information; (ii) perform regular and timely assessments of knowledge on BES and their interlinkages; (iii) support policy formulation and implementation; and (iv) build capacities needed to strengthen the science–policy interface. More recently, a ‘fifth’ element, communications and outreach, has been given considerable attention as a necessary mechanism to support and advance the original four functions.

Towards the end of its first work programme in 2017, the Plenary (i.e. the governing body) of IPBES agreed that a review of the Platform’s first work programme should be undertaken by an independent panel (IPBES 2015). Building on an in-house internal review undertaken in early 2018, this comprehensive independent review was conducted between June 2018 and February-2019. The review report (IPBES 2018f) was welcomed by the seventh session of the Plenary in May 2019, which also adopted a second work programme incorporating in part the findings of the review. The authors of this paper – the independent review panel, the review coordination lead, and three consultants who worked with the panel – here present the main review findings, contextualise those findings and discuss their implications for the future of the Platform, at a time when a new deal between humanity and nature is called for (UNEP 2019).

The review sought to evaluate the effectiveness of IPBES as a science–policy interface and the extent to which it is designed (conceptual underpinning, key assumptions underlying its objectives), positioned (in the international institutional landscape related to biodiversity), structured (governance, rules of procedure), and implemented (through its first work programme) to achieve long-term impacts on policies relating to biodiversity, ecosystem services and sustainable development.

Multiple sources of evidence were used including the internal review findings, online surveys, semi-structured interviews, document and literature reviews, a bibliometric study, a media impact study, and a theory of change analysis (IPBES 2018f).

This perspective paper is structured in three parts. The first part looks at the initial design and positioning of IPBES as a science–policy interface mechanism and the conceptual challenges associated with that bridging function. The second part looks at IPBES’ achievements at the end of its first work programme. The third part introduces some of the key review findings regarding the performance of IPBES and discusses key areas of development to strengthen its policy impact in the future.

### Conceptual underpinning: IPBES as a science–policy interface

IPBES was intended and designed to reach beyond traditional global environmental assessment approaches and has thus several innovative features. First, IPBES recognizes and works with a diversity of knowledge systems related to biodiversity and ecosystem services, with considerable emphasis on indigenous and local knowledge. IPBES also spans the natural and social sciences, economics, policy knowledge and human-wildlife interfaces, including health. Working with these different epistemologies has proven both beneficial and challenging.

Underpinning the work of IPBES is a conceptual framework, adopted in 2013 (Díaz et al. 2015), which has provided a useful set of approaches and procedures for working with indigenous and local knowledge (ILK). The conceptual framework has influenced the development of the concept of ‘nature’s contributions to people’ (Díaz et al. 2018). Although this concept is still debated in the literature, nature’s contributions to people attempts to recognize that there are multiple worldviews about the Earth system. Whether such significant changes in conceptual thinking should originate from the assessment work of an organization such as IPBES, rather than from debates in the scientific literature is still an open question (Braat 2018; Kadykalo et al. 2019; Sala and Torchio 2019).

At the international level, biodiversity is governed through several specialist UN Agencies and Programmes (UNEP, UNESCO, FAO, UNDP) and several Multilateral Environment Agreements (MEAs). These agencies, programmes and agreements have their own mechanisms for generating knowledge and advice. Biodiversity-related MEAs are linked through a Biodiversity Liaison Group, which has had mixed success to date, while the Rio Conventions (UNCBD, UNCCD, UNFCCC) also have a Joint Liaison Group, dealing largely with administrative matters.

Critically, IPBES positions itself beyond any one single sector or issue: its founding resolution calls for discussion on the 'economic, social and cultural value' of biodiversity (UNEP 2012, p. 4). The multidisciplinary and multi-sectoral character of IPBES is becoming even more evident in the context of the rolling work programme (to 2030) recently approved by the IPBES Plenary (Decision IPBES-7/1). For example, the future work programme includes assessments of the interactions of biodiversity and ecosystem services, with water, food and health, and the impact and dependence of the business sector on biodiversity which are, in turn, relevant to the wider sustainable development agenda. The challenge then for IPBES as a science–policy interface is to create and diffuse shared knowledge seen as credible, legitimate, and relevant from numerous perspectives and world views.

Beyond the breadth of the issues IPBES covers, challenges also arise around the most appropriate scale for proposed management interventions. The resolution establishing IPBES emphasizes the need to conduct assessments at global, regional, and sub-regional scales and to consider inputs from stakeholders at different levels, including scientific organizations, NGOs, local communities, and businesses (UNEP 2012). However, the primary targets for IPBES products and actions are national governments and managers of biodiversity assets often operating at a sub-national to local scale.

The review placed IPBES at the juncture between multiple existing organizations, sectors, scales and disciplines that poses coordination challenges. As a science–policy interface, IPBES has to manage and acknowledge the tensions and trade-offs between three dimensions: i) technical/scientific credibility, ii) legitimacy in terms of representation of multiple perspectives, and iii) relevance to policy needs while ensuring the appropriate independence from political considerations. In practice, however, the relationship between science and politics/policy is much more fluid, open to change, and plays out differently at different times, contexts and places, i.e. that 'science and the evaluation of scientific evidence cannot be divorced from the political, cultural and social debate that inevitably and justifiably surrounds these major issues' (Horton and Brown 2018). The recognition of this interdependence between science and politics offers the glue, through cooperation and negotiation, that holds expertise and policymaking together (Beck and Mahony 2017; van Oudenhoven et al. 2018), and allows achievement of mutual understanding while preserving the distinction between the respective roles.

Figure 1 illustrates how the credibility and legitimacy of a process, and the relevance of the knowledge produced for decision- or policymaking are still held as the key criteria to evaluate the effectiveness of boundary work between science and policy and the potential for knowledge to inform decisions and

collective action (see, e.g. Heink et al. 2015; Clark et al. 2016; Gustafsson and Lidskog 2018). The review panel used these same elements to frame the review of IPBES as a science–policy interface and as an organisation. Within this framework, the four functions of IPBES (namely assessment, policy support, capacity building and knowledge generation), as well as communications and outreach as a key support function were evaluated against the key deliverables of IPBES to determine its effectiveness as a science–policy interface. Collectively, these five elements create the capabilities of IPBES to deliver knowledge that is useful to policymakers and decision-takers.

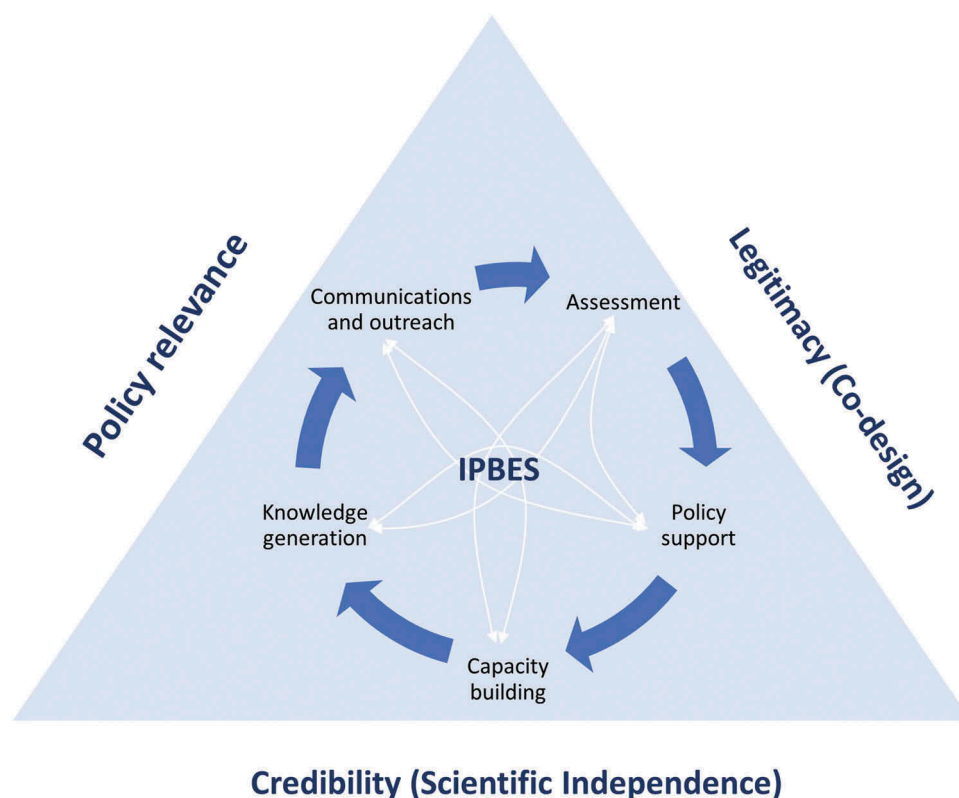
### IPBES structure, functions and implementation

Since its formal establishment in 2012, IPBES has made significant progress, including the generation and release of eight assessments (IPBES 2016a, 2016b, 2018a, 2018b, 2018c, 2018d, 2018e, 2019), with a full Global Assessment of Biodiversity and Ecosystem Services most recently completed in 2019. In addition, IPBES has commenced three other assessments as part of an ambitious (but still underfunded) further work programme. Assessments (especially their associated Summaries for Policymakers) advance global knowledge of biodiversity and ecosystem services and have contributed extensively to building capacity among natural and social scientists working on BES. The process through which IPBES assessments are produced creates a global scientific and synthesis community that may not otherwise have existed. The impacts of the IPBES-catalyzed scientific community often expand beyond the production of assessments, into the facilitated production of key scientific literature and other products that impact the development of BES science.

IPBES has established a governance structure comprising the Plenary (including all member states) as the primary decision-making body of the Platform, a 25-member Multi-disciplinary Expert panel (MEP) drawn from all UN regions that oversees the scientific and technical functions, and a 10-person Bureau that addresses the administrative and political functions. These decision-making structures are supported by a Secretariat that includes technical support units (TSUs) dedicated to supporting the work of specific taskforces and assessment teams. In addition, IPBES has stimulated the creation of a network of national focal points (NFPs), partnerships and communities of experts. The community of experts created by IPBES and its membership of 133 countries to date represents a very positive base to continue to expand and build impact.

Since establishment, IPBES has developed several formal mechanisms and practices to operate at the boundary between science and policy. It





**Figure 1.** Managing the science–policy interface to achieve impact through knowledge within IPBES. The four IPBES functions (assessment, policy support, capacity building and knowledge generation) with the additional element on communication and outreach collectively create the IPBES capabilities to deliver knowledge to policy across the science–policy interface and effectively influence its key stakeholders to achieve the objective of better sharing, managing and conserving biodiversity and ecosystem services. Solid arrows indicate linear relationships while thin arrows indicate non-linear relationships. This illustrates the overall complexity that IPBES must manage internally while also pursuing legitimacy, credibility and policy relevance.

- (i) is demand-driven: members of the Plenary provide requests for assessments, decide on the assessments to be carried out, provide inputs in the scoping, and provide comments, negotiate and approve the summaries for policymakers;
- (ii) comprises four key functions (assessment of knowledge on BES, support for policy formulation and implementation, capacity building to strengthen the science–policy interface, and catalysing knowledge generation), together with communications and outreach supporting all four functions;
- (iii) has mechanisms (including through formal partnership agreements) to link to key international bodies in the biodiversity regime, namely several multilateral environmental agreements related to biodiversity;
- (iv) works with a range of knowledge systems; and
- (v) allows for the participation of stakeholders in its work.

IPBES has adopted rules of procedures for its decision-making and preparation of its deliverables, including assessments. IPBES has established Memoranda of

Cooperation with the four key UN bodies (UNEP, UNESCO, FAO, UNDP) that assisted in its establishment, several of the biodiversity-relevant MEAs, and with some other strategic partners (e.g. Future Earth and GBIF). Additionally, IPBES quickly developed a stakeholder engagement strategy and mechanisms, such as stakeholder days held ahead of the formal Plenary meetings, and the possibility for stakeholders to nominate experts to participate in assessments and review processes (with a guiding principle limiting the experts selected for IPBES deliverables from nominations made by stakeholders to 20%).

### Lessons learned: concrete achievements in terms of science–policy interface

While IPBES is well positioned to make a significant impact towards the sustainable management of BES, there are a number of areas for improvement that need attention over its next phase of implementation. The review found five key areas needing attention for IPBES to achieve its mandate, namely

- (1) define a vision and mission, as part of a strategic planning process;

- (2) significantly strengthen the policy dimensions of its work;
- (3) bridge the tension between the global and regional scope of its work to the essentially national and local nature of implementation;
- (4) develop a clear approach to stakeholder engagement;
- (5) ensure its financial sustainability in the long term.

Below we focus on some issues that will impede the long-term future for IPBES if not addressed at this stage.

Recognizing and dealing with knowledge held by indigenous peoples and local communities on biodiversity and ecosystems has been fundamental to IPBES from the outset. Indigenous peoples and local communities use environmental cues to understand trends and potential future scenarios, based on observation and understanding accumulated over many generations and these have been used as exemplars in several of the Assessments (e.g. Pollination, Land Degradation and Restoration). Although locally derived, this knowledge constitutes an important, often scale-independent, contribution to biodiversity governance. As part of the review, it was noted that this is one area where IPBES has experimented with different approaches and gone much further than other similar assessment bodies to include a range of knowledge systems. This openness comes with challenges, not least in defining the process (e.g. a participatory mechanism under discussion since 2013 but not yet been fully implemented) and the people who can legitimately represent these other knowledge systems.

In a crowded institutional landscape, IPBES has established its scientific credibility to a large extent, legitimacy to a significant extent (less so with other knowledge systems than science) but policy impacts remain a challenge. Whilst IPBES is clearly perceived as an SPI, divergent views exist amongst IPBES stakeholders on what this means in practice and what should be expected from such an SPI. IPBES is currently operating largely as a science-based organization that has yet to engage fully with and effectively navigate the interface between science, policy and practice and bridge the gap between these areas of work. To date, most work undertaken and catalyzed by IPBES has focused on the 'S' of the SPI, i.e. the scientific assessments. Whilst this is arguably the appropriate focus for the start-up phase, to establish both scientific credibility and scientific product, it begs the question as to how well IPBES has met its entire original SPI mandate. Further, the original shape of IPBES was premised not only on achieving all functions simultaneously, but in an integrated manner (Figure 1). Progress has thus been uneven across the four core functions, with assessments and knowledge generation initially attracting the most attention and resources, slow progress in the admittedly complex yet equally important

capacity-building efforts and least advancement in the policy support function. The policy support function has to date been implemented primarily through the development of an extensive online catalogue of policy support tools. However, a range of inputs to the review suggest that the policy support function remains the least successful pursuit of the four functions.

A key question is just how relevant the current suite of assessments has been for policy support, and if there has been an adequate focus on the capacity building across the full SPI spectrum. Considerable efforts have been, and continue to be, made to include capacity building in the scientific assessments completed so far; however, capacity-building expectations appear to be centered around utilization of the scientific outputs for policy support. In this respect, the major gap in the multiple assessment development processes conducted to date stems from the current 'internal IPBES' view of the assessments as a scientific 'product', whereby engagement with policymakers typically occurs only, or largely, in the final stages of the production process.

Argument is made by IPBES members and stakeholders that, for the assessments to be more policy-relevant, and for significant capacity to be built in the policy-development and policy advice realm, assessments should be viewed as processes for and of policy engagement. An effective approach for policy-relevant output means full involvement of decision-makers, practitioners and experts working at the interface of knowledge, policy and practice, from the initiation of each assessment through to co-design, co-development, and co-production of the actual output, i.e. 'S-P' interfacing throughout the process, and not just post-production. Such an enhanced engagement process will greatly improve the value and utility and uptake of assessments for policy especially at the national level and for a wide range of stakeholders. Whilst the undoubted value of the assessments to the MEAs is recognized, for many stakeholders the assessment scope is often seen as occurring over scales that are broader than that by which biodiversity management is typically implemented. IPBES should therefore improve its ability to have long-term, sustainable and transformative impact through knowledge and tools generated by scientific assessments that are increasingly scalable and that can be brought directly to support policy change. Building the evidence base is necessary but it is insufficient to attain impact in an SPI process and a more extensive policy interface is required.

Credibility, legitimacy and relevance are critical to maximize the potential for impact through knowledge. However, there is a need to better acknowledge the tensions and trade-offs between them in terms of representing multiple perspectives on issues (Figure 2). Strengthening policy expertise, evaluating existing policies, developing policy options in assessments and

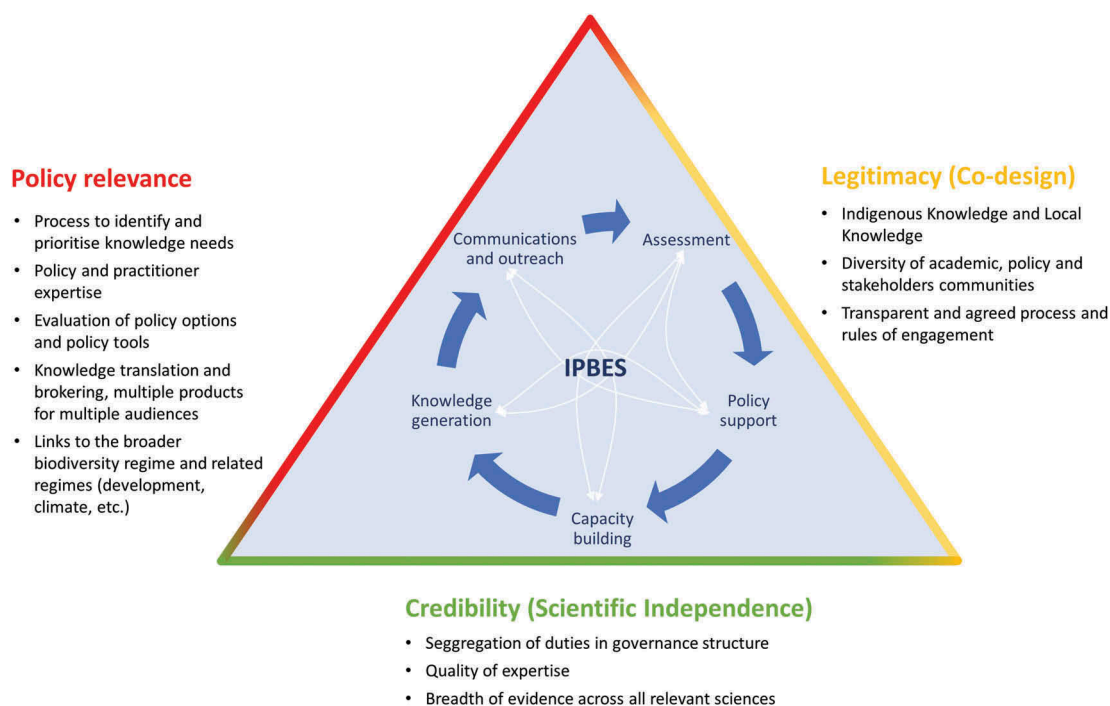
ensuring dialogue between scientists, practitioners and decision-makers are key to ensure that IPBES can enhance decision-making at different scales, for various stakeholders and multiple sectors. Strengthening of the policy side by increasing the buy-in and legitimacy of the SPI should not weaken or affect the scientific independence that is so important for the credibility of the assessments being conducted.

Such an enhanced science–policy interface needs to be developed and actively managed across the four functions. Priorities that are essential to ensuring an IPBES with strong policy impact in the future include the following:

- Policy questions should frame all aspects of IPBES work. The ‘policy-relevant but not policy-prescriptive’ principle derives from the early days of the IPCC, and in the IPBES context such a principle should not be used to guard against knowledge that can more directly inform policy choices. We note there is a continuum between ‘policy-relevant’ and ‘policy-prescriptive’ measures, which leads to a recognition that a greater need exists to identify and assess a full range of policy options, including perhaps some that, at first blush, may be politically less palatable;
- Extending the scope of expertise included in IPBES to encompass policy-developers as well as practitioners, including managers of biodiversity assets;
- Developing capacities regarding the effectiveness of policy processes on BES and how to generate policy options as part of IPBES assessments;

- Addressing knowledge needs in a more nuanced manner, including the need for more explicit efforts to provide simple arguments on why biodiversity and ecosystems services matter, and the need to provide actionable evidence, tools and options to a range of public and private decision-makers;
- Making the development of policy options the basis of all phases of any assessment.

Beyond the need to increase the policy relevance of IPBES processes and outputs, the process of knowledge production and the legitimacy of the knowledge produced have a major bearing in its ability to lead to action (Posner et al. 2016). In this regard, IPBES should develop a more strategic engagement approach to its stakeholders. Currently, a significant lack of clarity exists regarding the various types of actors that are or could be involved in IPBES, and the various pathways to participation in IPBES activities. Greater emphasis on cross-disciplinary, cross-specialist and cross-sector co-production across multiple knowledge systems will be essential for the future development of the Platform. In particular, the engagement of IPBES with the corporate sector should be strengthened to achieve responses both from a legislative as well as a compliance perspective on BES matters. In addition, a continuing emphasis and innovation around indigenous and local knowledge will be critical. Whilst there have been significant and continuously improving efforts to bring ILK into IPBES processes, further improvements are necessary, including engaging productively with indigenous peoples and



**Figure 2.** IPBES’ performance to date across the three evaluation criteria for a science–policy interface. Based on Figure 1, this figure illustrates broadly the overall findings of the external review of IPBES’ first five-year Work Programme. Green indicates the component achieved satisfactorily/well, yellow where progress is reasonable, but not yet optimal, and red/orange where stronger emphasis is needed. The text associated with each of the three criteria provides some descriptors of key requirements underlying the fulfilment of the related criteria.



local communities (providing feedback as well as acquiring knowledge), and ensuring the participation of indigenous knowledge holders and managers of natural resources from the outset of any activities.

Perhaps understandably, given its initial focus, IPBES still has difficulty in engaging expertise beyond the fields of natural sciences. There are well-identified gaps in expertise, notably in the engineering, medical and social sciences, that has the potential to impact IPBES' ability to execute its overall mandate and influence policy across the broad spectrum of relevant direct and indirect drivers of biodiversity loss and ecosystem degradation.

## Conclusion

The mechanisms and practices of science, policy and stakeholder communities interacting within IPBES produce more than knowledge for decision-making: it creates tools, joint framing of the problems, a common language, capacities, and a space for enhanced dialogue between actors holding different values, perspectives, norms and practices of governance of BES. As importantly, it creates an engaged scientific community that can support the future work of IPBES. Achieving policy impact through improved knowledge, the explicit aim of IPBES, will require it to actively manage the multiple dimensions that constitute the science–policy interface, across disciplines, sectors, knowledge systems, and geographical scales, and the ability to work synergistically with a wide range of institutions and sectors. Strengthening the process of knowledge co-creation and brokering from issue identification and definition to the communication and translation of evidence to national and international policymakers will be especially important in the future. These are important requirements, beyond procedural, to stimulate demand and promote closer dialogue between science and policy catalyzing action towards transformative change.

In future, IPBES impact will be enhanced if it can respond to the challenges raised by the review. However, the inertia of a large intergovernmental process assures that change may be incremental and slower than desirable to assist the full and effective development of the science–policy interface. IPBES is poised to make significant policy impacts, but this may mean moving at a pace of change beyond the norm for intergovernmental processes. That is choice is for IPBES to make, how does it want to impact the policy discussion and how important is this to its continued success?

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